

WHAT IS CLAIMED IS:

- 1 1. A system providing network infrastructure services, comprising a
2 shared memory facility interconnecting a plurality of network devices each
3 configured to perform a dedicated network infrastructure function.

- 1 2. The system of claim 1, wherein the dedicated network infrastructure
2 function is selected from the group consisting of: a network security function, a
3 quality of service function, and a network management function.

- 1 3. The system of claim 2, wherein the dedicated network infrastructure
2 function is selected from the group consisting of: a proxy function, a load balancing
3 function, a memory caching function, an encryption function, a compression
4 function, a re-routing function, an application level network management function,
5 and an active network management function.

- 1 4. The system of claim 1, wherein the shared memory facility is a global
2 shared memory facility, a distributed shared memory facility, or a logically shared
3 memory facility.

- 1 5. The system of claim 1, wherein each network device is operable to
2 perform only a single network infrastructure function.

- 1 6. The system of claim 1, wherein each network device is configurable
2 and comprises a local processor and a local memory.

- 1 7. The system of claim 6, wherein each network device includes in local
2 memory an application module operable to control the functionality of the network
3 device, and a configuration file containing parameters controlling operating
4 characteristics of the network device.

- 1 8. The system of claim 7, wherein each network device further comprises
2 a kernel operable to provide basic services to the network device.

1 9. The system of claim 6 wherein the dedicated network infrastructure
2 function performed by a network device is dynamically configurable.

1 10. The system of claim 9, where the dedicated network infrastructure
2 function performed by a network device is selected based upon a network
3 management policy.

1 11. The system of claim 6, wherein each network device further comprises:
2 a local communications protocol stack; and
3 a shared memory interface system operable to provide a local shared memory
4 network between the network devices, and a global shared memory network
5 between the network devices and one or more remote nodes by capturing packets
6 from the local communications protocol stacks and routing the captured packets over
7 the shared memory facility.

1 12. The system of claim 11, wherein the shared memory interface system
2 on each local node comprises a local shared memory virtual adapter and a global
3 shared memory virtual adapter;

4 the local shared memory virtual adapters being operable to capture locally
5 addressed packets from the local communications protocol stacks and to route the
6 captured packets for physical transport over the shared memory facility; and

1 the global shared memory virtual adapters being operable to capture globally
2 addressed packets from the local communications protocol stacks and to route the
3 captured packets for physical transport over the shared memory facility.

1 13. The system of claim 12, wherein the local shared memory virtual
2 adapters appear to the local communications protocol stacks as device drivers for
3 physical network adapters connected to the local shared memory network, and the
4 global shared memory virtual adapters appear to the local communications protocol
5 stacks as device drivers for physical network adapters connected to the global shared
6 memory network.

1 14. The system of claim 11, wherein the local shared memory network and
2 the global shared memory network provided by the shared memory interface system
3 are each characterized by a respective configurable maximum transfer unit (MTU).

1 15. A method of providing network infrastructure services, comprising
2 interconnecting through a shared memory facility a plurality of network devices each
3 configured to perform a dedicated network infrastructure function.

1 16. The method of claim 15, wherein the dedicated network infrastructure
2 function is selected from the group consisting of: a network security function, a
3 quality of service function, and a network management function.

1 17. The method of claim 16, wherein the dedicated network infrastructure
2 function is selected from the group consisting of: a proxy function, a load balancing
3 function, a memory caching function, an encryption function, a compression
4 function, a re-routing function, an application level network management function,
5 and an active network management function.

1 18. The method of claim 15, further comprising dynamically configuring
2 the dedicated network infrastructure function performed by a network device.

1 19. The method of claim 18, further comprising selecting the dedicated
2 network infrastructure function performed by a network device based upon a
3 network management policy.

1 20. The method of claim 15, further comprising providing a local shared
2 memory network between the network devices, and a global shared memory
3 network between the network devices and one or more remote nodes by capturing
4 packets from local communications protocol stacks of the network devices and
5 routing the captured packets over the shared memory facility.

1 21. A computer program residing on a computer-readable medium and
2 comprising computer-readable instructions for causing a computer system to

- 3 interconnect through a shared memory facility a plurality of network devices each
- 4 configured to perform a dedicated network infrastructure function.